Publishing research results

M.H. Fahmy, P. Volland-Nail

Proceedings of the 7th International Conference on Goats, 15-21 May 2000. Tome II, p: 963-965

R 14

PUBLISHING RESEARCH RESULTS

M. H. FAHMY [1], P. VOLLAND-NAIL [2]

[1] Agriculture and Agri-Food Canada, P.O. Box 90, Lennoxville, Quebec, Canada
[2] Unité PRMD, INRA, Centre de Tours, 37380 Nouzilly, France

1. Types of scientific publications

A scientific communication is a written and published report to transmit scientific knowledge from a scientist or a group of scientists to an interested general or specialized audience (Day 1989). It can take various forms namely:

1.1. Original scientific paper

Original scientific papers report results on original and usually intensive studies being reported for the first time in a printed form in a primary, peer-reviewed, periodical journal. The material should not have been previously published anywhere, except in a preliminary form such as a poster or an abstract published in proceedings of scientific meetings. Original papers should be in a form whereby peers of the author(s) can repeat the experiment and test the conclusions.
Original scientific papers are organized in an agreed-upon common format (IMRAD). The paper should have the following sections in the following order:

Title, should be precise and indicative of the subject of the aricle;
Authorship, usually arranged according to contribution in the work and complete postal address(es) of the affiliated institutions involved;
Corresponding author, if different from the senior author, and his/her full telephone, fax number and e-mail address if available;
Abstract, followed by keywords (some journals require a summary either before the introduction or after the conclusions; some others require abstracts in more than one language);
Introduction, giving a brief background for the study and stating clearly its objective and how it relates to available knowledge;
Material(s) and methods (or procedures);
Results;
Discussion, or Results and Discussion combined,
Conclusions (either separately or combined with discussion);
Acknowledgements (optional);
References, either in alphabetical order or numbered according to the order of citation.

1.2. Technical notes and short communications

Technical notes are concise but complete description of a limited investigation or based on a limited data. Short communications report preliminary results of original research experiments that need to be available to the scientific community within a short period of time. Results

published in these types of publication should not be included in a later paper. They should be as completely documented, both by reference to the literature and description of the experimental procedures employed, as an original paper. They should not occupy more than 6 printed pages including figures, tables and references.
Some journals require sectioning them as in original papers, some others may accept them with an Abstract, a combined Introduction-Material and methods-Discussion section, and References.
They take shorter time to publish than original papers.

1.3. Review articles and book chapters

A review is a summary of previously published original scientific papers to put them into some kind of perspective. A review is based on several already published papers, so it is not considered as an original publication. To be an effective source of information, review articles should cover subjects falling within the scope of the journal publishing them and should generate active current interest (Day, 1989).
In review articles, there are no Material and methods and Results sections, however, the Introduction and Discussion sections are expanded.
Review articles should not be summaries of original papers, cut and pasted one after the other, but rather a kind of summary of the similar or different results from various studies. In review articles the reader is expected to learn the state of the art in the subject treated. In good review articles, the author is expected to arrive to some concensus or authoritative and critical evaluation of the published literature on a subject, for example if he (or she) reports on estimates of heritablility of a trait he (or she) should make the effort to get the average of all the estimates reported.
The list of references should include most if not all the recent and relevent publications.
Authors of review articles should take into consideration that their audience is much larger than if they were writing an original scientific paper. Review articles are often read by many people in related fields since reading reviews is the best way to keep up in one's broad areas of interest.
Book chapters are usually written by invitation from the editor and are similar in arrangement and objectives to review articles.

1.4. Conference report and abstracts

Papers presented at conferences to be later published in proceedings are mostly reviews but some may be original. Publication of papers in a conference proceeding would generally disqualify them for later publication in primary journals. Because the space allowed in proceedings for each presentation is limited, normally 1 or 2 pages, and often maximum of 4 pages, it is not wise to publish important findings in proceeding since the author will be forced to compact his (or her) paper to fit the allowed space. In addition, the acquisition of proceedings by libraries is much less than original journals which results of important findings may not be readily available to a large audience.
Conference papers may report on original work in progress with only preliminary results presented.
Abstracts or summaries of papers presented at scientific meetings, whether reporting on completed research or research still underway, are usually published in the proceedings of the meeting. Although reference to these abstracts can be made, the publication of just an abstract is not considered as a primary publication and the same results can be published later in periodicals.

1.5. Case report

Mostly published in veterinary journals. A case report may have various objectives: alert veterinarians to new diseases not previously recognized in a particular species or observed in a

particular geographic area; demonstrate novel treatment or surgical procedure for a known disease. A case report is usually short, rarely exceeding 4 printed pages. It should include a complete description of the animal(s) affected by the disease known in veterinary terms as "signalment". The structure of a case report varies according to the journal but is should include an appropriate literature review and discussion to demonstrate the uniqueness of the case and/or the new approach to treatment or management.

1.6. Letter to the editor

Authors can question the scientific content of any published paper by writing to the Editor-in-chief. Some journals publish these letters as part of their regular features. Some journals also publish scientific knowledge which may not fit as a "technical note" as a "letter to the editor". These can be cited as any scientific publication.

2. Choosing the appropriate journal for publishing the research

The impact of a scientific paper on the scientific community does not depend exclusively of its own value but also of the journal in which it is published. So, choosing the right journal is a critical step in planning an original scientific paper (Matthews et al 1996). The choice must be made before typing the manuscript to be in accordance with the "Guide for Authors" published regularly by each journal.

Several criteria must be examined carefully, step by step:

2.1. Aims and scope of the journal

First, the choice depends on the subject area covered by the journal, on the nature of the work and on the journal's audience. "Is the topic of the paper within the journal's scope ?" must be the first question.

The journals'name indicates the field covered, but it is necessary to read the part "Aims and Scope" of the journal or the brief statement of purpose always printed on the cover of each issue of the journal. It is also appropriate to examine carefully the "Table of Contents" of recent issues.

2.2. Prestige of the journal

The "notoriety" of a journal in the scientific community is a subjective criterion, but it can be estimated by looking at the members of the editorial board, by the peers'judgment on the journal, and by the prominence of scientists who publish in the journal.

A more objective "prestige factor" is given by the "impact factor" of the journal.

The impact factor created by the Institute for Scientific Information (ISI) (Garfield 1972, 1979) is published annually along with a series of other indicators in what is commonly known as the Journal Citation Reports (JCR). JCR is based on the analysis of citations of the articles by other scientists.

The exact definition given by Garfield (1996) is: "The impact factor is basically a ratio between citations and recent citeable items published. Thus, the impact factor of Journal X would be calculated by dividing the number of all current citations of source items published in Journal X during the two previous years by the number of articles Journal X published in those two years".

To use this criterion, it is necessary to compare the impact factors for two or more journals in their specific fields. Such comparison should be made carefully: the use of this criteria often based on isolated impact factor values has no doubt led to over- or under- estimation of journals.

A rereading of the data based on the notion of belonging to a group of journals enables fuller and more nuance judgements to be made on journals (Magri et al 1997).

2.3. Diffusion factor

The criterion of "diffusion" of the journal is also essential. The size of the journal's audience must be evaluated, at the same time as the ways of its diffusion. It is important to verify:

- Indexation of the journal in the secondary sources of information: Current Contents, which international databases, etc…
- Diffusion via Internet: is the journal accessible online via the Web or not?
- The circulation factor: it can be estimated in American journals with the "Statement of Ownership, Management and Circulation" which publish every year all the data about the number of copies, the total distribution, etc …

2.4. Functioning of the journal

Several other functioning criteria of the journal are important for the choice:

- The "frequency factor": publishing time in a monthly journal is almost always shorter than publishing in a quarterly journal.
- The "rapidity" of publication: if the journal publishes information on date of reception it is possible to evaluate the average lag of time from submission to publication.
- The process of reviewing the papers: it is better to publish in a journal with peer-review than without.
- The accuracy of "Guide for Authors": if they are precise and clear, it is easier to prepare the manuscript because they answer many pertinent questions.
- The material "quality" of the journal, particularly for graphics and photographic (half-tone) reproduction.
- Publication cost is also an important criterion of choice: some journal charge for each page published.
- Reprint cost: some journals provide a certain number of free reprints while others charge for each reprint ordered.

3. The processes of submission, peer-reviewing, editing and printing

3.1. Preparing the manuscript for publication

Before typing the manuscript, the author should read the "Guide for Authors" and follow them carefully. Each journal has its own format and papers can be rejected if they do not conform to that format, or at least delayed if they have to be sent back to authors. The "Guide for Authors" are printed regularily in the journal, available on Internet or could be obtained by writing to the journal or the editor.

3.2. Submitting the manuscript

After typing the paper according to the format of the choosen journal, authors should prepare a covering letter indicating their mailing address, telephone and fax numbers as well as their e-mail address. It is important to write the title of the paper submitted and provide two return labels. Authors should always send the original and the required number of copies, and make sure that they are all easy to read. Authors should also make sure that they send the package in well sealed and strong envelops. Also to write the name and address of the current editor clearly and correctly. If the paper is sent by airmail, the required postage should be used.

3.3. The review process

3.3.1. Reception and acknowledgement.

Upon receipt of the manuscipt by the Editorial office or the Editor-in-chief, a letter of acknowledgement is sent to inform the corresponding author that his/her manuscript was received and inform him/her of the log number of the paper. Also this letter is used to inform the author of the name and address of the associate editor processing his/her paper. The log number should always be used in any correspondence since it facilitates tracking down the paper.

3.3.2. Peer reviewing.

The Editor-in-chief is assisted by associate editors and members of the editorial board as well as scientists in the field. These cover a wide range of specialization and expertise. The Editor-in-chief channels the papers to associate editors according to their specialization. These in turn send the papers to expert peers to evaluate the papers technically. Referees write a detailed evaluation and make a recommendation on whether to accept the paper or not. Based on that, the associate editor, either inform the authors that their paper is not acceptable, or indicate the changes and modifications the authors have to do to have their papers accepted.

3.3.3. Revising manuscripts

Upon receipt of the editorial comments and suggestions, the authors are required to follow them or give reasons why they think they should not accept them. All authors of the paper should approve the changes made on the revised version. Some journal require all authors to sign a form indicating their approval. The authors then re-type their revised papers and send two copies of the revised version together with a copy of the revised version on diskette. Some journals also require that authors return the marked copy(ies).

3.4. The publishing process

Accepted papers are sent to the printer for publication. They are type-set and a galley proof is produced. A copy is sent to the author for his (or her) final approval and to correct any type-setting mistakes. At this stage any major changes in the text can result in delaying the publication or can cost the author(s) money. Authors should make their corrections and return the proofs as soon as possible. This is also the time to order reprints and release copyrights to the journal.

References

DAY R.A., 1989. How to write & publish a scientific paper. 3rd Ed. Oryx Press, Phoenix, USA.

GARFIELD E., 1972. Science 78, 471-479.

GARFIELD E., 1979. Citation indexing - its theory and application in science, technology, and humanities. John Wiley & Sons, New York, 274 p.

GARFIELD E., 1996. Science Citation Index. Journal Citation Reports. Printed guide to the microfiche edition of the SCI JCR 1995.

MAGRI M.H., SOLARI A., RERAT K., 1997. *In* VOLLAND-NAIL P. (coordinator) : Un point sur L'information scientifique et technique: nouveaux enjeux documentaires et éditoriaux. Colloque INRA, 21-23 octobre 1996, Tours. INRA Editions, Paris. 71-89.
(url : http://www.inra.fr/USER/Jouy/UCD/b_metrie/magri_en.htm)

MATTHEWS J.R., BOWEN J.M., MATTHEWS R.W., 1996. Successful scientific writing. A step-by-step guide for biological and medical sciences. Cambridge University Press, Cambridge, UK.